

CLAIMS

1. A packaged integrated circuit device comprising:
a substrate having a recessed central region surrounded by a raised perimeter, the central region and the perimeter being formed together from the same material, the central region having a plurality of contacts for providing electrical connection from conductors external to the substrate to an integrated circuit device; and
an integrated circuit device formed with contacts on a top surface, flipped, and placed against the central region of the substrate such that the contacts of the integrated circuit device meet the contacts of the central region of the substrate.
2. The packaged integrated circuit device of Claim 1 wherein the contacts of the central region of the substrate are electrically connected to solder balls on an external surface of the packaged integrated circuit device.
3. The packaged integrated circuit device of Claim 1 wherein the substrate is formed primarily from a ceramic material.
4. The packaged integrated circuit device of Claim 3 wherein the ceramic material also includes glass, thereby comprising a glass ceramic material.
5. The packaged integrated circuit device of Claim 1 wherein the contacts of the central region of the substrate comprise solder bumps.
6. The packaged integrated circuit device of Claim 1 further comprising a heat spreader connected to the integrated circuit device with thermal grease.

9. The packaged integrated circuit device of Claim 1 wherein the raised perimeter incorporates a capacitor electrically connected to power and ground contacts of the integrated circuit device.

a raised peripheral area incorporating at least one capacitor connected to contacts in the recessed central region.

12. The integrated circuit package substrate of Claim 11 wherein the ground and power terminals are connected respectively to ground and power supply terminals of the integrated circuit device.